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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,734	03/18/2004	Alex A. Behfar	BIN 9	5050

7590 10/10/2007
William A. Blake
Jones, Tullar & Cooper, P.C.
P.O. Box 2266 Eads Station
Arlington, VA 22202

EXAMINER

GOLUB, MARCIA A

ART UNIT	PAPER NUMBER
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2828

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10/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/802,734

Applicant(s)

BEHFAR ET AL.

Examiner

Marcia A. Golub

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/10/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-47 is/are pending in the application.
- 4a) Of the above claim(s) 28-30 and 33-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-27, 31, 32 and 42-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/7/07, 10/16/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election of an embodiment depicted in Figs 2-6a and 7b (gaps etched in cavity segments) in the reply filed on 10/16/06, is acknowledged. Figures 1, 6b and 7a (no gaps) are withdrawn from consideration.

Applicant's election of a semiconductor waveguide laser in a reply filed on 3/5/07 is acknowledged. Solid-state laser embodiment has been withdrawn from consideration.

Applicant's election of an embodiment depicted in Fig 7b (V-shaped laser cavity) in the reply filed on 7/10/07 is acknowledged. Figures 2-6a (ring-shaped laser cavity) are withdrawn from consideration.

Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The applicant indicated that claims 1-10, 13-27, 42-47 read on the elected embodiment of V-shaped semiconductor waveguide laser.

The examiner disagrees, **claims 31 and 32** also read on the elected embodiment. The restriction requirement is considered proper and is therefore made final.

Response to Arguments

Applicant's arguments have been considered but they are moot in view of new grounds of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2, 4, 5, 7-9, 13-24, 27, 42-47 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as

Art Unit: 2828

to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 2, 8 recite total length of the cavity between 10 um and 10 mm.

Claims 4, 7 recite a photonic device described in Fig 1, which was not elected.

Claim 5 recites a ring laser.

Claims 7, 10 recite etched facet at the Brewster angle described in Fig 6b, which was not elected.

Claims 8, 9 are dependent from claim 7.

Claims 13-24 are dependent from claim 10.

Claim 27 recites offset segment described in Fig 6b, which was not elected.

Claim 42 recites facets of the gat at an angle to the waveguide, described in non-elected Fig 6b.

Claims 43-47 are dependent on claim 42.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3, 6, 25, 26, 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite a monolithic segment with an etched gap extending though the segment. This is an oxymoron, an element that is divided by a gap cannot be monolithic. As best interpreted by the examiner the claims recite "a semiconductor laser cavity...". Furthermore, "monolithic semiconductor" is contradictory to applicant's own description of the laser. In the U.S. Pat. 6,680,961 incorporated by reference the semiconductor laser is described as being composed of several layers and is not cut out from a single crystal.

Claim Objections

Claim 3 is objected to because of the following informalities: the length of gap is 0.001 um not 0.0001 um. The examiner believes that this is a typo that appeared in the amendment. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Sirbu et al. (6,546,029), hereinafter '029.

Fig 3 of '029 discloses a semiconductor laser, comprising:

1. "a semiconductor laser cavity [100] having at least one segment and at least one output;

at least one etched gap [16] extending through said at least one segment;

("etched" is a product by process limitation that does not have a patentable weight in a device claim, same reasoning applies to other claims)

and at least one distributed Bragg reflector (DBR) [12a] at said at least one output.

3. "wherein said at least one laser cavity segment [100] includes an active region [27] and said gap [16] comprises spaced-apart facets extending through said active region, (facet is defined as a small plane surface and therefore meets the limitation of the claim)

and wherein said gap has a length of between about 0.001 um and about 10 um [1.5 um]." (4/56)

25. "a semiconductor waveguide cavity [100];

an etched gap [16] extending through said semiconductor waveguide cavity, said etched gap comprising a pair of parallel etched facets [defined by layers 18 and 34] spaced apart by a length of between about 0.001 um and 10 um [1.5 um]." (4/56)

Allowable Subject Matter

The indicated allowability of **claims 6, 14-24, 26-30, 32, 33, 35 and 38-41** is withdrawn in view of the newly discovered reference(s) and due to the amendment made by the applicants to the claims. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 25, 26, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belfar-Rad (5,132,983) hereinafter '983, and further in view of Evans et al. (4,952,019) hereinafter '019.

Fig 16 of '983 discloses:

1. "a semiconductor laser cavity having at least one segment [70] and at least one output [73];

at least one etched gap [space between 73 and 34] extending through said at least one segment; ("etched" is a product by process limitation that does not have a patentable weight in a device claim, same reasoning applies to other claims)

'983 discloses a reflector at the output face but does not disclose:

"at least one distributed Bragg reflector (DBR) at said at least one output."

However DBRs are well known in the art as evidenced by Fig 1 of '019.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '019 into the device of '983 by making the reflector at the output face a DBR for at least the purpose of providing wavelength selective feedback into the laser cavity.

6. "wherein the laser cavity includes two segments [70, 10] joined at an etched output facet, said at least one etched gap in at least one segment providing improved

Art Unit: 2828

unidirectionality." (9/51-55)

Fig 16 of '983 and Fig 1 of '019 discloses a semiconductor device comprising:

25. "a semiconductor waveguide cavity [280];

an etched gap [space between 190 and 192] extending through said semiconductor waveguide cavity, said etched gap comprising a pair of parallel etched facets spaced apart by a length [d]." '983 does not disclose the length d to be "between about 0.001 μ m and 10 μ m." However, '983 discloses adjusting the length of the gap in order to improve operation in a counterclockwise direction. (9/51-55)

It would have been obvious to one of ordinary skill in the art to find the optimum length for the gap, since the courts have held that optimization of range is not inventive unless it is accompanied by unexpected results, see MPEP 2144.05

26. "further including multiple etched gaps spaced along said waveguide cavity."

31. "a semiconductor laser cavity [280] having multiple segments [180] joined end-to-end at an etched facet to provide a laser output;

and at least one etched gap [190, 192] extending through at least one segment.

32. "further including a DBR [14] located externally of said laser cavity and adjacent said output etched facet."

Contact Info

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAG

**MINSUN OH HARVEY
PRIMARY EXAMINER**